

Appl. No. 10/624851

In the Claims:

Listing of all claims:

- 1           1.   (Currently Amended) A welding type power source
- 2           capable of receiving a range of input voltages and
- 3           frequencies, comprising:
- 4                an input circuit configured to receive an input
- 5           power signal having an input frequency and an input
- 6           magnitude and provide a first signal having a magnitude
- 7           responsive to the input magnitude;
- 8                a preregulator configured to receive the first
- 9           signal and provide a dc second signal having a
- 10          preregulator magnitude independent of the input
- 11          magnitude;
- 12                an output circuit configured to receive the dc
- 13          second signal and provide a welding type output power
- 14          signal having an output frequency independent of the
- 15          input frequency and having an output voltage independent
- 16          of the input voltage;
- 17                a preregulator controller, connected to the
- 18          preregulator, and further having a controller power
- 19          input; and
- 20                a control power circuit configured to receive
- 21          the dc second signal and provide a control power signal
- 22          to the controller power input, wherein the controller
- 23          power signal has a control power magnitude independent of
- 24          the input magnitude and a control frequency independent
- 25          of the input frequency, and further wherein the control
- 26          power circuit has a switch and start-up circuitry,
- 27          wherein the start-up circuitry includes control
- 28          circuitry.

Appl. No. 10/624851

1                    2.    (Original)        The apparatus of claim 1,  
2    wherein the input circuit includes a rectifier.

1                    3.    (Original)        The apparatus of claim 1,  
2    wherein the preregulator magnitude is greater than the first  
3    magnitude.

1                    4.    (Original)        The apparatus of claim 3,  
2    wherein the preregulator includes a boost converter.

1                    5.    (Original)        The apparatus of claim 4,  
2    wherein the boost converter includes a slow voltage switched  
3    switch and a slow current switched switch.

1                    6.    (Original)        The apparatus of claim 3,  
2    wherein the output circuit includes an inverter.

1                    7.    (Original)        The apparatus of claim 3 wherein  
2    the output circuit includes a switched snubber.

1                    8.    (Original)        The apparatus of claim 3,  
2    wherein the preregulator magnitude is greater than the control  
3    power magnitude.

1                    9.    (Original)        The apparatus of claim 3 wherein  
2    the control power circuit includes a buck converter.

10.   (Cancelled.)

Appl. No. 10/624851

1           11. (Currently Amended) A method of providing  
2       welding type power from a range of input voltages and  
3       frequencies, comprising:  
4           receiving an input power signal having an input  
5       frequency and an input magnitude;  
6           providing a first signal having a magnitude  
7       responsive to the input magnitude;  
8           converting the first signal into a dc second  
9       signal having a second magnitude independent of the input  
10      magnitude;  
11          providing an output power signal derived from  
12      the dc second signal, wherein the output power signal is  
13      a welding type output and has an output frequency  
14      independent of the input frequency and further has an  
15      output voltage independent of the input voltage; and  
16          converting the dc second signal into control  
17      power, wherein the control power has a control power  
18      magnitude independent of the input magnitude, and wherein  
19      the control power is derived from a circuit that is  
20      controlled and receives power from a first set of circuit  
21      elements at start-up, and from a second set of circuit  
22      elements after start-up.

1           12. (Original)       The method of claim 11, wherein  
2       providing a first signal includes rectifying an ac signal.

1           13. (Original)       The method of claim 11, wherein  
2       the second magnitude is greater than the first magnitude.

1           14. (Original)       The method of claim 13, wherein  
2       converting the first signal into a dc second signal includes  
3       boost converting the first signal.

Appl. No. 10/624851

1                   15. (Original)       The method of claim 13, wherein  
2    boost converting the first signal includes a slow voltage  
3    switching and slow current switching a switch.

1                   16. (Original)       The method of claim 13, wherein  
2    providing an output power signal includes inverting the dc  
3    second signal.

1                   17. (Original)       The method of claim 13 wherein  
2    inverting the dc second signal includes switching a snubber.

1                   18. (Original)       The method of claim 13, wherein  
2    the second magnitude is greater than the control power  
3    magnitude.

1                   19. (Original)       The method of claim 13 wherein  
2    converting the dc second signal into control power includes  
3    buck converting the dc second signal.

1                   20. (Currently Amended) A method of providing  
2    welding type power from a range of input voltages and  
3    frequencies, comprising:  
4                    rectifying an input power signal having an  
5    input frequency and an input magnitude to provide a  
6    rectified signal having a rectified magnitude responsive  
7    to the input magnitude;  
8                    boost converting, including slow voltage  
9    switching and slow current switching, the rectified  
10   signal to provide a boost dc signal having a boost  
11   magnitude greater than and independent of the rectified  
12   input magnitude;  
13                    inverting, including switching a snubber, the  
14   dc second signal to provide a welding type power output

Appl. No. 10/624851

15 having an output frequency independent of the input  
16 frequency and having an output voltage independent of the  
17 rectified magnitude; and  
18 buck converting the boost dc signal to provide  
19 a control power signal, wherein the control power signal  
20 has a control power magnitude less than and independent  
21 of the boost magnitude, and a control frequency  
22 independent of the input frequency, and providing power  
23 to a buck convertor from a first set of circuit elements  
24 at start-up, and from a second set of circuit elements  
25 after start-up.

1 21. (Currently Amended) A welding type power  
2 source capable of receiving a range of input voltages and  
3 frequencies, comprising:  
4 input means for receiving an input power signal  
5 having an input frequency and an input magnitude and for  
6 providing a first signal having a magnitude responsive to  
7 the input magnitude;  
8 converting means for converting the first  
9 signal into a dc second signal having a magnitude  
10 independent of the input magnitude, wherein the  
11 converting means is connected to receive the first  
12 signal;  
13 means for providing a welding type output power  
14 signal derived from the dc second signal, wherein the  
15 output power signal and has an output frequency  
16 independent of the input frequency and further has an  
17 output voltage independent of the input voltage, and  
18 wherein the means for providing an output power signal is  
19 disposed to receive the dc second signal;

Appl. No. 10/624851

20 means for converting the dc second signal into  
21 control power, wherein the control power has a control  
22 power magnitude independent of the input magnitude; and  
23 means for providing power to a circuit that  
24 provides the control power from a first set of circuit  
25 elements at start-up, and from a second set of circuit  
26 elements after start-up.

1 22. (Original) The apparatus of claim 21,  
2 wherein the first means includes means for rectifying an ac  
3 signal.

1 23. (Original) The apparatus of claim 22,  
2 wherein the convertor magnitude is greater than the first  
3 magnitude.

1 24. (Original) The apparatus of claim 23,  
2 wherein the converting means includes means for boost  
3 converting the first signal.

1 25. (Original) The apparatus of claim 24,  
2 wherein the means for boost converting includes means for slow  
3 voltage switching and slow current switching a switch.

1 26. (Original) The apparatus of claim 25,  
2 wherein the means for providing an output power signal  
3 includes means for inverting the dc second signal.

1 27. (Original) The apparatus of claim 26  
2 wherein the means for inverting includes means for switching a  
3 snubber.

Appl. No. 10/624851

1           28. (Original)       The apparatus of claim 27,  
2 wherein the converter magnitude is greater than the control  
power magnitude.

1           29. (Original)       The apparatus of claim 28  
2 wherein the means for converting the dc second signal into  
3 control power includes means for buck converting the dc second  
4 signal.

1           30. (Currently Amended) A welding type power  
2 source capable of receiving a range of input voltages and  
3 frequencies, comprising:  
4           a dc bus;  
5           an output circuit configured, having a control  
6 input and to receive the dc bus and provide a welding  
7 type output power signal having an output frequency  
8 independent of the input frequency and having an output  
9 voltage independent of the input voltage;  
10          a controller, connected to the control input  
11 and further having a controller power input; and  
12          a control power circuit configured to receive  
13 the dc bus and provide a control power signal to the  
14 controller power input, wherein the control power circuit  
15 is further configured to receive power from a first set  
16 of circuit elements at start-up and a second set of  
circuit elements after start-up.

1           31. (Original)       The apparatus of claim 30,  
2 wherein the output circuit includes an inverter.

1           32. (Original)       The apparatus of claim 31,  
2 wherein the output circuit includes a switched snubber.

Appl. No. 10/624851

1           33. (Original)       The apparatus of claim 30,  
2 wherein the dc bus has a magnitude is greater than a magnitude  
3 of the control power signal.

1           34. (Original)       The apparatus of claim 30  
2 wherein the control power circuit includes a buck converter.

1           35. (Currently Amended) A method of providing  
2 welding type power from a range of input voltages and  
3 frequencies, comprising:  
4               receiving a dc bus having a dc magnitude;  
5               providing an output power signal derived from  
6 the dc bus, wherein the output power signal is a welding  
7 type output; and  
8               converting the dc bus into control power,  
9 wherein the control power has a control power magnitude  
10 independent of the dc magnitude, and wherein the control  
11 power is derived from a first set of circuit elements at  
12 start up and from a second set of circuit elements after  
13 start-up; and  
14               providing the control power to a controller  
15 configured to control the output power.

1           36. (Currently Amended) A method of starting to  
2 provide welding type power from a range of input voltages  
3 and frequencies, comprising:  
4               receiving an input power signal having an input  
5 frequency and an input magnitude;  
6               providing a first dc signal having a first dc  
7 magnitude responsive to the input magnitude;  
8               deriving a second dc voltage having a second dc  
9 magnitude less than the first dc magnitude



Appl. No. 10/624851

10                   controlling a control converter with the second  
11       dc voltage to produce a control dc voltage[;] from a  
12       first set of circuit elements at start up and from a  
13       second set of circuit elements after start-up; and  
14                   controlling an output converter with the  
15       control dc voltage to produce an output signal.